EPA Region 7 TMDL Review

TMDL ID	323	*Water Body ID*	Upper Kansas River 7; Lower Smoky Hill River 1, 2, 6, 9, 10, 11, 12, 13, 14, 15; Lower Saline River 1, 2, 3, 4, 5, 9, 13
Water Body Name	Upper Kansas River, Lower Smoky Hill River, Lower Saline River, Wolf Creek		
Pollutant	Sulfate		
Tributary	Tributaries attached to decision document		
State	KS	*HUC*	10260008, 10260010, 10270101
Basin	Smoky Hill/Saline		
Submittal Date	07/09/2004		
Approved	yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Kansas submittal letter received by EPA on July 9, 2004, formally submitting the TMDL document for approval; a revision to this TMDL was received September 29, 2004.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The current water quality standard (WQS) for domestic water supply at the point of diversion is set at 250mg/L sulfate (K.A.R.28-16-28e(c)(3)(A). The TMDL focuses upon conditions at Ogden because the Kansas River below the confluence with the Big Blue River has existing uses for Domestic Water Supply.

The loading capacity and wasteload allocations in this Phase 1 TMDL are set at the current numeric criterion of 250 mg/L sulfate. The existing criterion of 250 mg/L can be and is achieved on Lyon Creek, the Solomon River, the Smoky Hill River from Kanapolis to Salina, Mulberry Creek and Spillman Creek.

Provisional Phase 2 targets have also been set at the average concentration for samples collected at flows less than the median rate, due to the fact that the existing criterion is not achievable on the Saline River, the Smoky Hill River below Salina, the Upper Kansas River above Ogden and the tributaries to these main stem reaches, due to naturally occurring sources from area geology. However, these provisional targets will have to be established in Phase 2 using the appropriate administrative and technical WQS procedures and processes. The Phase 1 endpoint of 250 mg/L will be established at any point of diversion constructed for water supply along the streams of the watershed above Ogden ensuring water quality standards attainment.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The water quality standards, beneficial uses and numeric criteria are described. The phase one target is the drinking water supply numeric criterion for sulfate, 250 mg/L.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The numeric target is the numeric criterion and the link between the target and the sulfate is direct.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There are natural, high background concentrations of sulfate due to mineral intrusion and the discharge of naturally saline groundwater from the Dakota and Wellington Formations and washover of water interacting with gypsum beds, outcrops and enriched soils. In localized cases, some elevation beyond natural sulfate levels can be attributed to oil-field brine and long term consumptive use of water by irrigation.

There are fifteen NPDES permitted facilities in the watershed which discharge to the Smoky Hill, Saline or Kansas Rivers; there are also twenty-eight non-discharging

municipal, commercial and industrial facilities. All other potential sources are discussed.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The allocation is expressed as a TMDL load duration curve, which is derived from the numeric criterion and the flow curve. The allocation is a function of the flow. The load allocations were calculated at the 75%, 50%, and 25% flow exceedence frequency. EPA notes that WLAs are fixed in the TMDL document by the design flow for each of the permitted facilities located within the TMDL area and the 250 mg/L sulfate criterion. However, in Phase 2 of this TMDL document, EPA will anticipate the inclusion of individual WLAs calculated for each discharging facility in the TMDL area.

WLA Comment

Phase 1 WLAs are provided for each of the following monitoring stations in tons/day: station 518 - 9.0; station 516 - 0.95; station 708 - 0.0; station 515 - 0.05; station 265 - 9.0; station 644 - 0.0; station 643 - 0.72; station 642 - 0.0; station 641 - 0.04; stations 268/514 - 0.57; station 267 - 0.11; station 513 - 0.20; station 640 - 0.01; station 671 - 0.0; station 672 - 0.0; station 673 - 0.0; 537 - 0.09.

LA Comment

Phase 1 load allocations for the following monitoring stations are set (starting at the downstream station) using the 75%, 50%, and 25% flow exceedence frequency respectively and in units of tons/day sulfate: station 518 - 2377, 889, 410; station 516 - 46, 23, 11; station 708 - 29, 14, 5; station 515 - 52, 25, 13; station 265 - 1398, 574, 252; station 644 - 202, 90, 32; station 643 - 23, 8, 2.2; station 642 - 96, 41, 14; station 641 - 44, 18, 5; stations 268/514 - 209, 96, 45; Smoky Hill River - Kanapolis Dam - 122, 60, 31; station 267 - 254, 75, 36; station 513 - 225, 67, 32; station 640 - 31, 12, 3.6; station 671 - 9, 4, 0.9; station 672 - 7, 2.7, 0.5; station 673 - 8, 2.9, 0.8; 537 - 17, 6, 2.7; Saline River - Wilson Dam - 107, 22, 14.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The MOS is explicitly set at 10% of the load allocation at the 75%, 50%, and 25% flow exceedence frequency respectively and in units of tons/day sulfate: station 518 - 264, 99, 46; station 516 - 5, 3, 1; station 708 - 3, 1, 1; station 515 - 6, 3, 1; station 265 - 155, 64, 28; station 644 - 22, 10, 4; station 643 - 2, 1, 0.3; station 642 - 11, 4, 2; station 641 - 5, 2, 0.5; stations 268/514 - 23, 11, 5; Smoky Hill River - Kanapolis Dam - 14, 7, 3; station 267 - 28, 8, 4; station 513 - 25, 7, 4; station 640 - 3, 1, 0.4; station 671 - 1, 0.5, 0.1; station 672 - 1, 0.3, 0.1; station 673 - 1, 0.3, 0.1; 537 - 2, 1, 0.3; Saline River - Wilson Dam - 12, 2, 1.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

Seasonal variation is documented with the seasonal consistency of elevated sulfate levels.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Public meetings were held on January 7 and March 5, 2003 in Hays to discuss this particular TMDL and others in the Smoky Hill/Saline basin. An internet web site also housed information for the public to access. A public hearing, held in Hays, was conducted on June 2, 2003 to discuss the Smoky Hill/Saline basin TMDLs; the Smoky Hill/Saline Basin Advisory Committee met to discuss the TMDLs in the basin on October 3, 2002, and January 7, March 5, and June 2, 2003. Meetings to discuss TMDLs also included the Smoky Hill Task Force on January22, February 27, April 16, and May 28, 2003.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

KDHE will continue to collect bimonthly samples from permanent and rotational stations between Kanapolis and Wilson Dams and the Kansas River at Ogden. Based on that sampling, the priority status will be evaluated in 2009 including application of numeric criteria based on background concentrations. Monitoring of sulfate levels in effluent will be a condition of NPDES and state permits for facilities.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurance includes numerous authorities and funding through the Kansas Water Plan.